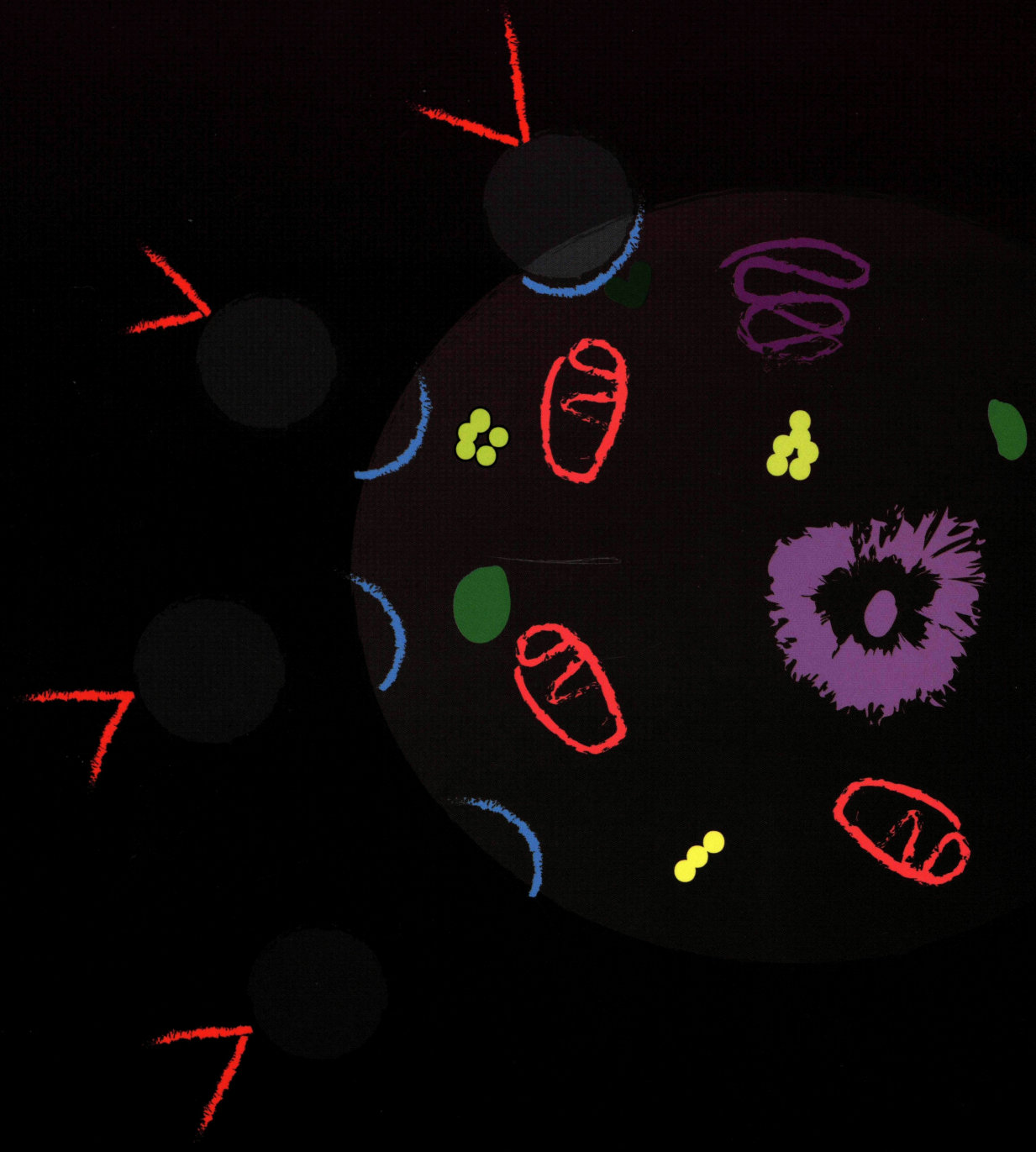
Volume 1 | 2015

COMPENDIUM OF ORAL SCIENCE

The Official Journal of The Faculty of Dentistry



UNIVERSITI TEKNOLOGI MARA

ISSN 2489-1102

COMPENDIUM OF
ORAL SCIENCE
The Official Journal of The Faculty of Dentistry

Volume 1|2015
ISSN: 2489-1102

Editorial Board

Editor-in-Chief
Kazi Ahsan Jamil

Editorial Board
Profesor Dr. Fouad Hussain M H Al-Bayaty
Assoc. Professor Dr. Norashikin Yusof
Dr. Nagham Mohammed Abdullah
Dr. Nik Mohd Mazuan Nik Mohd Rosdy
Dr. Alaa Sabah Hussein
Dr. Eddy Hasrul bin Hassan
Dr. Faezah Sabirin

Editorial Office
Mr. Abdullah Yusoff
Mrs. Maskiah Abdullah

Honorable Advisor to Editorial Board
Professor Dr. Mohamed Ibrahim Abu Hassan

Graphic Design
Mrs. Rubiah Mohd Yusoff

Editorial Address
Kazi Ahsan Jamil, BDS, PhD
Editor-in-Chief,
Compendium of Oral Science (Compend.Oral.Sci),
Faculty of Dentistry
UiTM Sungai Buloh Campus
Jalan Hospital,
47000 Sungai Buloh,
Selangor, Malaysia.
Tel: +603-6126 6511
Fax: +603-6126 6103
E-mail: kazi@salam.uitm.edu.my

Copyright © 2014 by Faculty of Dentistry, Universiti Teknologi MARA (UiTM). All rights reserved. Materials contained in the journal may be reproduced for educational purposes provided that both the author(s) and the editorial office are appropriately recognized; otherwise duplication is not permitted. No articles, reports, or portions there of may be translated into other languages, published in books, journals, magazines, or any other print form without written permission from the editor-in-chief.

Disclamer: The statements, opinions and data expressed in the articles and reports herein are those of the author(s) and not of the publisher and the editor(s). The publisher and the editor(s) disclaim responsibility for any injury to persons or property resulting from any schemes, methods, instructions or ideas referred to in the content.

Contents

Case Report

Blending The Appearance Of All-Ceramic Crowns In Fluorosis Condition With Direct Chair-Side Technique.

Siti Mariam Ab Ghani*[,1] Ahmad Syahir Ahmad Zu Saifudin[2], Muhammad Aliff Ikram Noor Zari[2], Teh Adilla Mustaza[1].

[1] *Centre of Restorative Dentistry Studies, Faculty of Dentistry, Sungai Buloh Campus, Universiti Teknologi MARA.*

[2] *Oral Health Division, Ministry of Health, Malaysia.*

Abstract

Dental fluorosis incidence had been reported to be affecting children widely, especially in water-fluoridated area. As these children grow into young adults, perceived aesthetic problems arise mainly due to their concern with generalized mottled and stained teeth appearance. Fixed prosthodontics treatment involving single anterior tooth in patients with generalized fluorosis condition had been found challenging due to aesthetic restorability to blend with fluorosis condition. **Clinical considerations:** A simplified procedural direct chair-side technique of mimicking fluorosis condition onto anterior all-ceramic crowns are discussed in this paper. The mimicked fluorosis is reversible and has the opportunity to be adjusted according to the patient's fluorosis condition thus hindering the need to redo the crown in the future. **Conclusions:** The appearance of anterior all-ceramic crowns with direct chair-side staining technique provided blended and harmonized well with the dental fluorosis condition in both patients thus, giving natural looking smile.

Keywords: *Dental fluorosis, all-ceramic crown, chair-side resin staining.*

Introduction

Dental fluorosis is a developmental disturbance of dental enamel, caused by successive exposures to high concentrations of fluoride during tooth development, leading to enamel with lower mineral content and increased porosity[1-2]. Compromised aesthetics in permanent dentition are the greatest concern in dental fluorosis condition[3].

Once these affected children grow into young adults, different types of cosmetic dental treatment can be provided for dental fluorosis condition includes bleaching, enamel abrasion, direct restorations and fixed prosthesis restorations[4-6]. This case report highlights a simplified procedural technique of blending and mimicking the dental fluorosis condition of patients onto a single anterior all-ceramic crown restoration, to provide an aesthetically balanced and harmonized dental appearance. The cases were done with the patients' request to omit any cosmetic dental treatment for the fluorosis condition due to time and financial constraint.

Case Report

Case 1

An 18-year-old male was referred to Centre of Restorative Dentistry Studies for management of recurrent failure of his upper left central incisor (21) composite resin restoration. He was involved in a motor vehicle accident 6 months

*Correspondence to: Siti Mariam Ab Ghani, Centre for Restorative Dentistry Studies, Faculty of Dentistry, Universiti Teknologi MARA Sg. Buloh Campus, Jalan Hospital, 47000 Sungai Buloh, Malaysia.
Email: sitimariam783@salam.uitm.edu.my
Tel: +603-61266611 Fax: 603-61266103

ago and sustained uncomplicated fracture of 21. Direct composite resin restoration was provided, however the direct restoration had poor aesthetical value and did not blend with the patient's generalized fluorosis condition (Fig 1A).

Case 2

A 22-year-old male was referred to the Centre of Restorative Dentistry Studies for further restorative management of his unsightly endodontically treated upper left central incisor (21) (Fig. 1B). Radiographical investigation found a poorly done endodontics treatment with insufficient length of post on the tooth, which denotes the need for endodontics re-treatment.

Case Management

Treatment planning.

Both patients were advised and given the available treatment modalities by the prosthodontist for restoring the complaint teeth. They agreed to the option of bonded all-ceramic crowns. Both patients also have significant generalized dental fluorosis conditions, therefore various treatment options was given to reduce the fluorosis before starting the fixed prosthesis treatment. However, due to time constraint and financial, both patient refused any treatment for their fluorosis condition.

Tooth preparations for all-ceramic crowns.

Shade selection was taken under natural light using the shade guide (VITA Toothguide 3D-Master, California USA). A 1.0mm labial and palatal reduction and 1.5mm incisal reduction was made with supra-gingival shoulder margin all around (Fig 2A & 2B). A provisional crown was fabricated using bis-acryl material (Protemp™ 4 Temporisation Material, 3M ESPE USA) to provide provisional optimum aesthetical and functional values.

Master impression for both tooth preparations were taken using polyvinyl siloxane (PVS) impression material with heavy and light-body one -step wash technique (Aquasil Ultra LV and Heavy Smart Wetting® Regular Set Impression Material, Dentsply USA).

Fabrication of the all-ceramic crown.

Lithium disilicate ceramic (IPS e.max Press, Ivoclar Vivadent, Liechtenstein Switzerland) was the material of choice for the fabrication of the bonded all-ceramic crowns for both patients. Written instructions and photographs were sent to the laboratory together with the

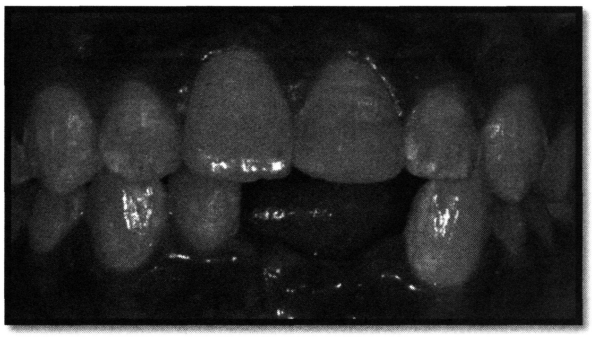


Figure:1A- Pre-operative condition of tooth 21 (Case 1)

Figure: 1B- Pre-operative condition of tooth 21 (Case 2)

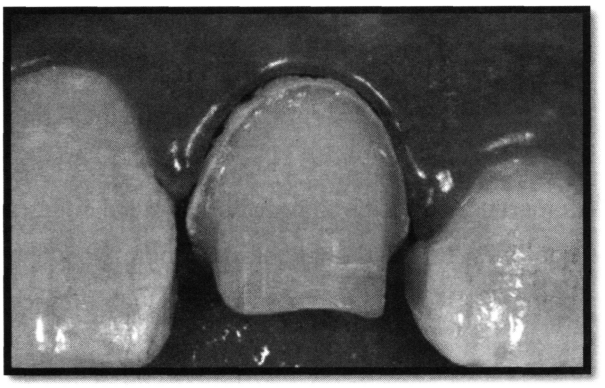


Figure: 2A- Tooth preparation for bonded all-ceramic crown on 21 (Case 1)

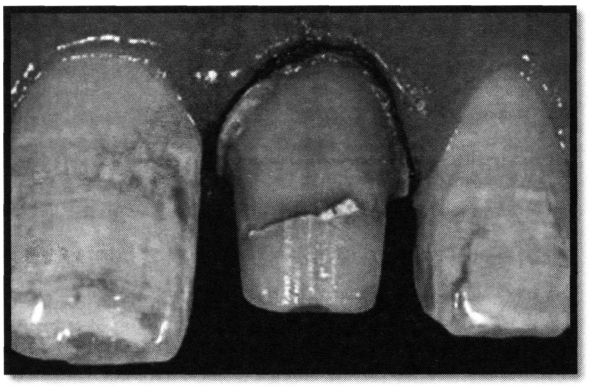


Figure: 2B- Tooth preparation for bonded all-ceramic crown on 21 with composite core and fiber post (Case 2)

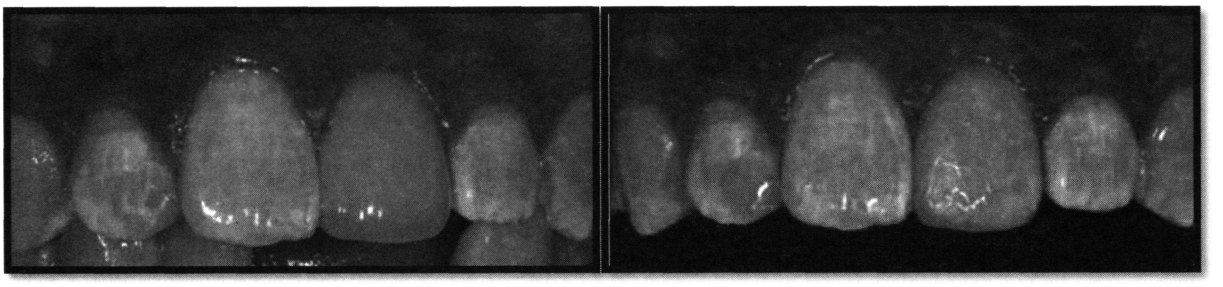


Figure: 3A- Crown 21 before and after characteristics staining (Case 1)

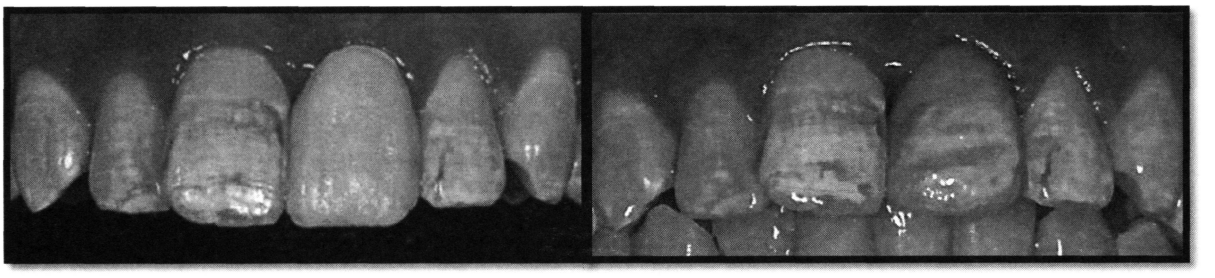


Figure: 3B- Crown 21 before and after characteristics staining (Case 2)

master impressions, face bow transfers and bite registrations. The unique dental fluorosis characteristics were not done in the laboratory and were planned clinically. Thus the finishing glaze of the crowns did not include the labial surface to allow further characteristics to be done chair-side.

Direct chair-side staining of all-ceramic crowns. The fabricated crowns were seated intra-orally and the contacts and occlusion with adjacent and opposing teeth were checked. Once satisfied, the crowns were removed from the tooth preparations. Direct staining methods started with the extra-oral application of a porcelain-etching agent (hydrofluoric acid 7-9%) on the labial surface of the crown for 10 to 15 seconds.

The acid was then washed thoroughly for 60 seconds and dried completely. Next, silane was then applied and left to dry. Place the crowns intra-orally and the fluorosis condition of the adjacent teeth was then mimicked and matched on the all-ceramic crowns by using a light-cured resin color modifier and opaquing kit (Kolor+Plus, Kerr). The resin colour modifiers were applied in very thin layers; bit-by-bit to create the fluorosis characteristics using a fine tip brush. Once the characteristics coloring completed, the composite resin staining material was light cured for 15 seconds. Then the crowns were removed from the intraoral environment and a thin layer of translucent composite resin (acts as a protective layer) was placed covering the whole labial surface of the characterized crowns. The protective layer is light-cured for 30 seconds and the labial surfaces were then polished until smooth and shiny.

Fitting procedure

Cementations of the crowns were done with composite resin luting cement (Calibra® Esthetic Resin Cement, Dentsply) in a strictly practiced moisture control. Patients were happy and satisfied with the prosthesis provided to them (Fig 3A & 3B).

Discussion

Bonding silica-based dental ceramic (lithium-disilicate) to composite resin is common in cementations procedure and repairing chipped porcelain in fixed prostheses. In this case reports, the addition of direct staining with resin colorant to treated surface ceramics also imply the same concept of bonding to silica-based dental ceramics.

There are few factors that can increase the bonding durability, such as the silanization process and surface treatment. Bonding strength resulted from silanization to a silica based dental ceramic is known to be high, predictable and excellent around 25-35 Mpa[7-8]. Silane has been a medium of choice to provide chemical interaction between the dental ceramic and resin luting cement. Studies also concluded that surface treatment with hydrofluoric acid etching does produce greater bond strength of silica-based dental ceramic to resin[9-10].

In both case studies discussed, decision to go for direct staining chair-side procedure was due to the severe fluorosis condition of both patients. Although both patients has been advised on different treatment to reduce the fluorosis condition before fixed prostheses, they refused due to time and financial constraint. However, they both expressed the desire to undergo more comprehensive whitening regime in the future. This direct chair-side technique gave us the opportunity to adjust accordingly the dental fluorosis features on the crowns to blend with the rest of the dentition in the future. This will eliminate the need to fabricate new crown once the fluorosis condition has changed.

Conclusion

The restorations provided to these two patients comprise the combination of both dental ceramic and composite resin materials, thus making the prognosis for aesthetical value remains favourable with a prolonged longevity.

Acknowledgement

This project was funded by Research Grant 600 -RMI/RAGS 5/3 (126/2012) and Research Grant 600-RMI/RAGS 5/3 (125/2012) from Universiti Teknologi MARA.

References

1. Alvarez JA, Rezende KMPC, Marocho SMS, Alves FBT, Celiberti P, Ciamponi AL. Dental fluorosis: exposure, prevention and management. **Med Oral Patol Oral Cir Bucal 2009:** 14; 103-107.
2. McDonagh M, Whiting P, Bradley M, Cooper J, Sutton A, Chestnut I. A systematic review of public water fluoridation. **Br Med J 2000**; 321:855-859.
3. Sharol LS, Rahimah AK, Tuti NMD. Esthetic perception and psychosocial impact of developmental enamel defects among Malaysian adolescents. **Journal of Oral Science 2004**; 4: 221-6.
4. Griffin SO, Beltra´n ED, Lockwood SA and Barker LK. Esthetically objectionable fluorosis attributable to water fluoridation. **Community Dentistry and Oral Epidemiology. 2002; 30:** 199-209.
5. Celik EU, Yildiz G and Yazkan B. Clinical evaluation of enamel microabrasion for the aesthetic management of mild-to-severe dental fluorosis. **J Esthet Restor Dent 2013; 25:** 422-430.
6. Kamble VD and Parkhedkar RD. Esthetic rehabilitation of discolored anterior teeth with porcelain veneers. **Contemp Clin Dent 2013; 4:** 124-6.
7. Debnanth S, Wunder SL, McCool JL, Baran GR. Silane treatment effects on glass/resin interfacial shear strengths. **Dent Mater 2003; 19:** 441-8.
8. Chiayi S, Oh WS, William JR. Effect of post-silanization drying on the bond strength of composite to ceramic. **J Prosthet Dent 2004; 91:** 453-8.
9. Filho AM, Vicira LC, Araujo E, Monteiro JS. Effect of different ceramic surface treatments on resin microtensile bond strength. **J Prosthodontic 2004; 1:** 28-35.
10. Huang BR, Wang XY and Gao XJ. Effects of different surface treatments on ceramic repairs with composite. **Chin J Dent Res. 2013;** 16(2): 111-117.

Letter To Editor

Adopting law school pedagogy into teaching and learning of dentistry- my Melbourne experience

Dear Editor,

In 2014, I was fortunate to be accepted into the fully-funded Specialist Certificate in Teaching and Melbourne Teaching Certificate programs at Melbourne Graduate School of Education, ranked world's second-best institution in the field of educational study (QS Top Universities, 2014). In the midst of completing my PhD study at the University of Melbourne, I was determined at taking advantage of the opportunities and gaining as much experience as possible that the University could offer in an endeavor to improve the quality of dental education and practice back home. Meeting other current and future leaders in education, I was overwhelmed by the unique differences portrayed in relation to our academic, career and cultural backgrounds, as well as the enthusiasm expressed by each of the participants. This further inspired me to be adamant in adopting such diversity into establishing a symbiotic relationship that would lead to the advancement of higher education.

One of the tasks during these programs was to observe teaching and learning activities of a colleague from a different faculty, which in my case was law. Coming in for this activity with misconceptions about the teaching of law, I then became stimulated with the amount of discussion, debate and brainstorming in the classroom, brought about by the 'blended learning approach' in teaching. In the teaching of law, the blended learning approach, which integrates face-to-face teaching, independent studying and online learning experience, prepares students to be actively engaged in classroom discussion and brain-storming in discussing examples of legal cases and other learning issues (Hess, 2013). Rather than merely learning the theory or concept outlined in the legal documents, Act or constitution, such learning techniques have been proven effective in preparing graduates with employability skills fundamental to the professional practice of law, including oral and written communication skills, teamwork and time management (Lane, 2016).

From this observational experience, I came to a conclusion that the teaching of dentistry should also adopt an approach such as that of the teaching of law, which emphasized on integrating the fundamentals of scientific theory and professional practice. Such a learning approach is essential, as graduates of Malaysian dental school were reported to be incompetent in applying theoretical knowledge into providing holistic patient care (Yusof, et al., 2010). An effective learning strategy that seeks to focus on comprehensive patient management through evidence-based approach is therefore important in order to prepare students for the future challenges of clinical practice. A learning

environment that stimulates students' active participation in teaching and learning is also integral to developing strong interpersonal skills and professional demeanour, which is crucial for one's future career progression.

Similar to the teaching of law, blended learning approach has been introduced and implemented in dental schools around the world, including Malaysia (Bhardwaj, et al., 2015, Maresca, et al., 2014, Reissmann, et al., 2015). The blended learning approach has been found effective in improving students' clinical skills, understanding and interest in the subject matter (Maresca, et al., 2014, Reissmann, et al., 2015). Self-directed learning approach, adopted in blended learning, also encourages students to become self-sufficient individuals in undertaking independent life-long learning (Faraone, et al., 2013). In addition to blended learning, I hereby opine that problem-based-learning (PBL) activities should be implemented in integration with the former, and in a larger scale, in order to provide students with opportunities in engaging and applying the theories they learn into managing patients in a clinical setting (Barman, et al., 2006). The current extent of PBL incorporated into the undergraduate dental curriculum in Malaysia should be enhanced, with more sessions conducted to discuss a variety of clinical cases. Case scenarios that include aspects relating to systemic health, socio-economic status, emotional and psychological wellbeing, environmental factors including cultural and social norms, as well as other issues that may affect treatment planning and maintenance of health need to be incorporated in an attempt to prepare students for providing care in a holistic manner. Implementation of blended-learning activities, which reduces the content of learning to be carried out face-to-face, allow for more opportunities for PBL to be conducted.

Besides increasing the amount of student' engagement with PBL, the implementation of PBL should also be assessed, to ensure its' quality and effectiveness. Students' diversity, such as that related to language proficiency, cultural values or technology literacy, need to be assessed and addressed, as some Asian students reported facing difficulty in adapting to this learning method (Sanders and Lushington, 2002). Dental educators, including academic advisors and mentors, need to play a proactive role in identifying students who experience issues in adapting to PBL activities, and develop strategies to remedy issues faced by these individuals. A one-stop academic center that caters for guiding students who experience learning difficulty, such as that available at the University of Melbourne, would be beneficial in supporting students' diversity in any area of learning.

Another suggestion for an improved students' learning experience, adopted in other institutions, is to establish a 'think tank' or a focus group, consisting of student representatives from each academic year to address any pedagogical issues. Such initiative is relevant in Asian countries, where the students are culturally unprepared to be critical and outspoken, especially during teaching and learning (Khoo, 2003). Lack of student-faculty engagement may also occur as a result of superiority standard that exists within the dental fraternity, in which specialists are held in high regard and may be perceived as being too intimidating to be approached (Rowland, et al., 2010). Having

a 'think tank' group and faculty student advocate may bridge this gap as representatives from both sides of the party collaborate to improve the quality of teaching and learning (Pritchard, et al., 2009).

Overall, the programs have offered me an interesting experience and opportunity to learn from peers across the University, dedicated to development of teaching and learning. I learnt the different educational challenges encountered by other disciplines and the various teaching strategies adopted. Such an experience provided me with a valuable insight into enhancing my own teaching performance, drawn by integrating the various perspectives of academicians of other fields.

Mas Suryalis Ahmad

Faculty of Dentistry UiTM Sungai Buloh Campus Jalan Hospital 47000 Sungai Buloh Selangor Darul Ehsan
Email: drsuryalis@salam.uitm.edu.my
Tel: +603-6126 6601 Fax: +603-6126 6103

References:

1. QS Top Universities (2014). QS World University Rankings by Subject 2014 - Education. London: QS Top Universities [updated 2014; cited 2015 Apr 16]. Available from: http://www.topuniversities.com/university-rankings/university-subject-rankings/2014/education-training#sorting=rank+region=+country=+faculty=+stars=false+search=
2. Hess GF (2013). Blended Courses in Law School: The Best of Online and Face-to-Face Learning? ***McGeorge. Law. Rev.*** **45 (1), 51-84.**
3. Armbruster P, Patel M, Johnson E, and Weiss M (2009). Active learning and student -centered pedagogy improve student attitudes and performance in introductory biology. ***CBE. Life. Sci. Educ.*** **8(3), 203-213.**
4. Victoroff KZ, and Hogan S (2006). Students' Perceptions of Effective Learning Experiences in Dental School: A Qualitative Study Using a Critical Incident Technique. *J. Dent. Educ.* 70(2), 124-132.
5. Faraone KL, Garrett PH, and Romberg E (2013). A blended learning approach to teaching pre-clinical complete denture prosthodontics. ***Eur. J. Dent. Educ***. 17(1), e22-e27.
6. Khoo HE (2003). Implementation of problem -based learning in Asian medical schools and students' perceptions of their experience. ***Med.*** *Educ.* 37(5), 401-409.
7. Rowland ML, Naidoo S, AbdulKadir R, Moraru R, Huang B, and Pau A (2010). Perceptions of intimidation and bullying in dental schools: a multi-national study. ***Int. Dent. J.*** **60(2), 106-112.**

SUBMISSION GUIDELINES

Mission and Scope:
Compendium of Oral Science (Compend.Oral.Sci*), is the official journal of the Faculty of Dentistry, Universiti Teknologi MARA (UiTM). The goal of Compendium of Oral Science is to publish peer-reviewed, hypothesis-driven,original research articles on a broad range of topics of general interest to those working on the oral science and dentistry. The journal welcomes submissions in a wide array of subspecialties from throughout the world in achieving this goal.*

Types of Articles Published
Authors are invited to submit manuscripts for publication as Regular articles (full-length research reports), short communications, case reports, Reviews and Letters to Editors.

Regular Articles: These should describe new and carefully confirmed findings, and experimental procedures should be given in sufficient detail for others to verify the work. The length of a full paper should be the minimum required to describe and interpret the work clearly.

Short Communications: Short communications should aim at being **no longer than two printed pages**. They should contain important, new, definitive information of sufficient significance to warrant publication. Short communications need not follow the usual division into Material and Methods etc. but should have a short Abstract.

Case Reports: Illustrating unusual and clinically relevant observations are acceptable but their merit needs to provide high priority for publication in the Journal. On rare occasions, completed cases displaying non-obvious solutions to significant clinical challenges will be considered. Short papers not exceeding 1200 words, a maximum of three illustrations (with consideration to certain case reports) and five references may be accepted for publication if they serve to promote communication between clinicians and researchers.

The main text of **case reports** should be organized with Introduction, case report, discussion and conclusion.

A paper submitted as a brief clinical / case report should include the following:

- A short **introduction** (avoid lengthy reviews of literature);
- The **case report** itself (a brief description of the patient/s, presenting condition, any special investigations and outcomes);

Discussion which should highlight specific aspects of the case(s), explain/interpret the main findings and provide a scientific appraisal of any previously reported work (if any) in the field. Interpretation of their significance and to draw a **Conclusions** or generalizations about future cases when warranted by the evidence presented, or suggestion for further possible studies.

Reviews: Submissions of reviews covering topics of current interest are welcome and encouraged. Reviews should be concise and no longer than 4-6 printed pages (about 12 to 18 manuscript pages). Reviews are also peer-reviewed.

Letters to the Editor: Letters to the Editor regarding published articles should be received within 2 months of mailing of the journal, letters regarding profession related matters will also be considered. Authors are encouraged to keep letters concise and succinct, with a limit of no more than 750 words. Introduction of new data will not be permitted. Each letter will be submitted to the author of the original paper so that any reply may be published simultaneously with the letter. Letters should have a descriptive title.

Frequency: One issue a year

Manuscript Submission Process
Before submitting your manuscript to **Compendium of Oral Science (**Compend.Oral.Sci **)**, authors should be familiar with the Editorial Policies. These describe our requirements regarding human and animal research, materials and methods disclosure, and prior publication. Information regarding the expectations of reviewers and editors and the review process are also available on this page.

Letter of Transmittal
This letter must be supplied during submission. The signatures of the corresponding author is required. The letter must have following:

- **Manuscript Title:** The Author(s) name(s) (identify the corresponding author, with complete address, telephone, FAX, and e-mail information).(50 word maximum)
- **Type of Manuscript**: Regular Article, Short Communication, Case Report, Review and Letter to the Editor.
- **Brief Statement of Significance:** A statement that describes the significance of the paper.
- **Statement of Direct Participation:** statement that declares that all of the authors have directly participated in the planning, execution, or analysis of the study and resulting paper, and have read and approved the version submitted.
- **Information:** Must include information on prior or duplicate publication or submission elsewhere of any part of the work/study; and a statement of financial or other relationships that might lead to a conflict of interest. *Copies of any permission(s) to reproduce published material, and to use illustrations or report information about identifiable people must accompany the manuscript.*
- **Optional-** The contact information of any suggested reviewers (names, addresses, and e-mail).

Manuscripts submitted without a letter of transmittal will not be processed for peer review.

Licence to Publish
The corresponding author will be contacted to complete the "Compendium of Oral Science: License to Publish form" upon an editorial decision of Accept.

Upon acceptance of a paper, authors are required to assign the exclusive licence to publish their paper to the Compendium of Oral Science. Assignment of copyright is a condition of publication, and papers will not be passed to the publisher for production unless copyright has been assigned. A completed Copyright Transfer Agreement must be sent to the address specified on the agreement, before any manuscript can be published. Authors may send the completed original Copyright Transfer Agreement by fax (optional) but must be followed by mail upon receiving notice of manuscript acceptance. Do not send the Copyright Transfer Agreement at submission.

Copyright
Submission of a manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, or thesis) that it is not under consideration for publication elsewhere; that if and when the manuscript is accepted for publication, the authors agree to automatic transfer of the copyright to the publisher.

Authorship
All persons designated as authors should qualify for authorship. The entitlement to authorship should be based on all of the following criteria: (1) substantial contributions to conceptions and design, execution or analysis and interpretation of data; (2) drafting the article or revising it for important intellectual content; (3) final approval of the version to be published. *Acquisition of funding, collection of data, or general supervision of the research group, alone, does not justify authorship.* All contributors who do not meet the criteria for authorship should be listed in the Acknowledgements. *The order of authorship should be a joint decision of the co-authors.* Each author should have participated sufficiently in the work to take public responsibility for part of the content or the whole. Corresponding author must agree that above has been confirmed by all authors when submitting a manuscript.

Originality
By submitting your manuscript to the journal it is understood that this it is an original manuscript and is unpublished work and is not under consideration elsewhere.

Conflict of Interest
The Compendium of Oral Science*'s* policy requires that each author reveal any financial interests or connections, direct or indirect, or other situations that might raise the question of bias in the work reported or the conclusions, implications, or opinions stated including pertinent commercial or other sources of funding for the individual author(s) or for the associated department(s) or organization(s), personal relationships, or direct academic competition.
As an integral part of the submission process, Corresponding authors are required to confirm whether they or their co-authors have any conflicts of interest to declare, and to provide details of these.
Any changes made to the list of conflicts after the paper is accepted must be submitted in writing, signed by the appropriate authors (that is, the corresponding author and the author for whom the conflict exists), to the *Com-*

pendium of Oral Science Editorial Office. Publication of manuscripts will be withheld until all such written approvals are received. Compendium of Oral Science accepts no responsibility for such changes.

Experimental Ethics:

- **Animal experiments:** When reporting animal experiments authors should indicate whether the institution's, national research council's, or any other law on the care and use of laboratory animals was followed.
- **Human subjects:** When reporting on human subjects, authors should indicate whether the procedures followed were in accordance with the ethical standards of the Helsinki Declaration (1964, amended most recently in 2008) of the World Medical Association. Manuscripts should include a statement that the patient's written consent was obtained and any information, including illustrations, should be as anonymized as far as possible. Authors should indicate that the design of the work has been approved by local ethical committees or that it conforms to standards currently applied in the country of origin. The name of the authorizing body should be stated in the paper.

Clinical Trials

Authors should indicate that the design of clinical trial study has been approved by local ethical committees / appropriate authority or that it conforms to standards currently applied in the country of origin. The name of the authorizing body should be stated in the paper. The clinical trial registration number and name of the trial register will then be published with the paper.

Funding

All sources of funding should be declared in the Acknowledgements. If a private/commercial sponsor supported the research, authors are advised to describe the role of the study sponsor (s), if any, in study design; in the collection, analysis, and interpretation of data; in the writing of the report; and in the decision to submit the paper for publication. If the funding source had no such involvement, this should be stated.

Details of all funding sources for the work in question should be given in a separate section entitled 'Funding'. This should appear before the 'Acknowledgements' section.
The following rules should be followed:

- The sentence should begin: 'This work was supported by …'
- The full official funding agency name should be given, i.e. 'National Institutes of Health', not 'NIH' (_Grant numbers should be given in brackets as follows: '[grant number xxxx]'
- Multiple grant numbers should be separated by a comma as follows: '[grant numbers xxxx, yyyy]'
- Agencies should be separated by a semi-colon (plus 'and' before the last funding agency)
- Where individuals need to be specified for certain sources of funding the following text should be added after the relevant agency or grant number 'to [author initials]'.

An example is given here: 'This work was supported by the National Institutes of Health [AA123456 to C.S., BB765432 to M.H.]; and the Alcohol & Education Research Council [hfygr667789].'

Evaluation of manuscripts

Submitted manuscripts are subject to peer review and are expected to meet standards of academic excellence. Peer-reviewers identities will remain anonymous to the authors. The Editor-in-Chief's decision regarding publication is based on the recommendation of the reports of reviewers, which will, at the Editors' discretion, be transmitted to the authors.

Authors may suggest the names and addresses of a few potential reviewers. The Editors and Associate Editors will be guided but not necessarily bound by these suggestions.

Form and Style of Manuscript

Manuscripts must be written in English. Manuscript documents should be formatted as follows:

- They should be typed on A4 form (21×29.7 cm or 21.6×28 cm)
- Double spaced
- 2.5 cm (1 inch) margins
- Justify
- Page numbers at the bottom of each page; centered or right-justified
- **11-point font**; restrict fonts to **Arial** throughout the manuscript (Use of other fonts is not recommended and could result in problems with converting your manuscript for review.)

- Avoid boldface, underlining, or italics in the manuscript

Other formatting notes:

- We do not publish Appendices.
- Do not embed figures into the manuscript. They must be uploaded as separate files for each figure.

Separate pages should be used for the following:**(1) title page (s), (2) abstract, (3) text, (4) footnote(s) to the text, (5) references, (6) table(s), (7) legend(s) to figure(s), (8) declaration of Funding and Conflict of Interest** . The manuscripts should be arranged in the order indicated above and all pages should be numbered in succession except the figure(s), **the title page being page 1.**

Indicate the appropriate location in the text of the tables, figures, and other subsidiary materials by marginal notes. Latin words should be italicized (for example: in vitro, i.e., etc., per se). Footnote(s) to the author's name (s) and affiliation(s) should appear on the title page. All footnotes should be numbered in succession with superscript, Arabic numerals, starting from the title page footnote(s). Footnotes to tables should be identified with superscript lower case (a, b, etc.), and placed at the bottom of the table. Acknowledgement (if any) should appear after the main text, and before the References. It is advised that authors note any conflict of interest in this section.

Organization of Manuscript

A desirable plan for the organization of a **Regular Paper** is as follows: **(1) TITLE (2) ABSTRACT, (3) INTRODUCTION** with no heading, **(4) MATERIALS AND METHODS (5) RESULTS (6) DISCUSSION (7) REFERENCES.**

1. Title Page

Provide a title page, containing the following items.

i) The type of paper

ii) Title. The title should be informative and as short as is consistent with clarity. The title should not include chemical formulae or arbitrary abbreviations, but chemical symbols may be used to indicate the structures of isotopically labeled compounds. The numbering of parts in a series of papers is not permitted, but titles and subtitles may be used if necessary.

iii) Next-line. List full names of all authors. A footnote reference(s) to an author(s), indicating a change of address, should be given on the title-page.

iv) Next-line. List the institution(s) in which the work was carried out, and the Zip Code / post code, if available.

v) Running title. Provide a short running title of less than 50 strokes. It should be as informative as possible.

vi) The name, complete mailing address, telephone number, Fax number, and E mail address of the person to whom correspondence should be sent. To expedite the review, much of the journal's correspondence will be by E mail.

vii) Abbreviations. Non-standard abbreviations should be defined, even if they are known to those familiar with the field. List all non-standard abbreviations used in the paper in alphabetical order in a footnote on the title page.

Customary abbreviations in wide use need not be defined in text (e.g., RNA, ATP). Define other abbreviations the first time that they are used. Refer to the Journal of Biological Chemistry for recommended abbreviations for biological compounds, Chemical Abstracts for names of chemical compounds, Conn's Biological Stains (10th Edition, RW Horobin and JA Kiernan (eds.), BIOS Scientific Publishers) for nomenclature, and the CSE Style Manual (2006, 7th ed., Council of Science Editors) for scientific abbreviations. Use SI units only. The Journal does not print the degree symbol before temperature symbols. All temperatures are printed as follows: 80C, 37.4F, 276K.

2. Abstract

i) The Abstract should ***not exceeding 250 words***. Abstract text should be divided into the following sections: **Objectives** (a brief statement of the purpose of the investigation along with the the working hypothesis)- **Materials and Methods** (A brief description of the materials and experimental method used); **Results** (state the results simply and clearly so that significant facts can be readily identified, where appropriate, statistics should be clearly stated); **Conclusions** (a brief summary of the essential results you believe were demonstrated by the experimental data and the impact of the results). Abstract should be in a form comprehensible to any scientist and suitable for publication without the full article text.

Avoid statements such as "The significance of these results is discussed" that do not help the reader. The abstract should be intelligible to the non-specialist as well as the specialist in your field, and hence should avoid

specialized terms and abbreviations.

ii) **Key words**. Provide 3-5 key words identifying the nature of the subject matter alphabetically in the last part of the summary.

3. Introduction

The main part of an article should start with a brief Introduction, which outlines the historical or logical origins of the study and clearly states the aim of the study and/or hypothesis to be tested, without repeating the abstract or summarizing the results. Avoid giving an extensive review of the literature.

4. Materials and Methods

The materials and methods section should provide a sufficient detailed description of the methods to allow a researcher to reproduce your work. Companies from which materials were obtained should be listed with their location: city and state, province or country.

The **Experimental Procedures** or **Materials and Methods** should give sufficient details to enable the reader to repeat your work exactly, if necessary. **The necessity for conciseness should not lead to omission of important experimental details**. Refer to previously published procedures employed by citation of both the original description and pertinent published modifications, and do not include extensive description unless they present substantially new modifications.

This section should present clearly but succinctly the experimental findings. Only results essential to establish the main points of the work should be included. Numerical data should be analyzed using appropriate statistical tests.

For guidelines on how to report statistical results, see Bailar, JC, Mosteller, F (1988) Guidelines for statistical reporting in articles for medical journals. Ann Intern Med, 108:266-273; Curran-Everitt, D, Benos DJ, (2004) Guidelines for reporting statistics in journals published by the American Physiological Society. J Neurophysiol, 92:669-671; Lang, TA, Secic, M (2006) How to report statistics in medicine: annotated guidelines for authors, editors and reviewers, 2nd edition, Philadelphia, PA, ACP Press; Sarter M, Fritschy JM (2008) Eur J Neurosci 28:2363-2364. compact presentation.

Experimental animals: When experimental animals are used, specify ***species, strain, sex, age, supplier, and numbers of animals*** used in total and for individual experimental conditions. The species should be identified in the Title or Abstract.

Statistical methods: A complete description of statistical methods is required.

Permissions

If all or parts of previously published illustrations are used, permission must be obtained from the copyright holder concerned. It is the author's responsibility to obtain these in writing and provide copies to the publishers.

5. Results and Statistical Analyses

The observations should be presented with minimal reference to earlier literature or to possible interpretations. The main statistical results should be reported in the Results section. The description of the statistical results should include the proper statistical term (such as the F statistic) as well as the degrees of freedom and the

P value. The description of statistical results in the figure legends should be limited to important post hoc comparisons.

Statistical methods should be described with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, findings should be quantified and appropriate measures of error or uncertainty (such as confidence intervals) given. Details about eligibility criteria for subjects, randomization and the number of observations should be included. The computer software and the statistical method(s) used should be specified with references to standard works when possible

6. Discussion

The discussion section presents the interpretation of the findings, this is the only proper section for subjective comments. The discussion section should be as concise as possible and should include a brief statement of the principal findings while avoiding repetition of statements provided in the Abstract or the Results section.

A discussion of the validity of the observations, a discussion of the findings in light of other published work dealing with the same or closely related subjects, and a statement of the possible significance of the work. Extensive discussion of the literature is discouraged.

7. References

Only published and "in press" (i.e., accepted for publication in a specific journal or book) references should appear in the reference list at the end of the paper. The latest information on "in press" references should be provided. Any "in press" references that are relevant for reviewers to see in order to make a well-informed evaluation should be included as a separate document text file along with the submitted manuscript.
References cited in the text should be numbered in parentheses with Arabic numerals in order of appearance. Be sure to verify the wording of any personal communication with the person who supplied the information and get his approval for the use of his name in connection with the quoted information. All references should be listed in numerical order typed double-spaced on a separate sheet under the heading REFERENCES.
Please note the following examples.
(1) **For a journal article:**

7. Sanger F, Nicklen S, and Coulson AR (1977) DNA sequencing with chain-terminating inhibitors. ***Proc. Natl. Acad. Sci.*** *USA* **74**, 5463–5467

(2) For a chapter in an edited book:

12. Messing J (1983) New M13 vectors for cloning in ***Methods in Enzymology*** (Wu, R., Grossman, L., and Moldave, K., eds.) Vol. 101, pp. 20–51, Academic Press, New York

(3) For a book by one or more authors:

15. Sambrook J, Fritsch EF, and Maniatis T (1989) ***Molecular Cloning. A Laboratory Manual*** pp. 1339–1341, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY

Text citations to references written by more than two authors should be styled for example as, Smith et al. In the reference list, however, the names of all authors (with initials) must be given. If an article has been accepted for publication by a journal but has not yet appeared in print, the reference should be styled as follows:

29. Tanahashi H and Ito T (1994) Molecular characterization of a novel factor recognizing the interleukin-6 responsive element. ***J. Biochem.*** **(in press)**

References should be cited in the text as follows: "The procedure used has been described elsewhere (Green, 1978),"or "Our observations are in agreement with those of Brown and Black (1979) and of White et al. (1980),"or with multiple references, in chronological order: "Earlier reports (Brown and Black, 1979, 1981; White et al., 1980; Smith, 1982, 1984).... "

The use of "in preparation" and "submitted for publication" is not allowed in the reference list.
Citation of the references written in a language which is usually unreadable for general readers and those published in a journal (or book) to which general reader could not easily access should be avoided.

8. Figure Legends:
Figure legends must be placed after the Literature Cited section. Manuscript document files lacking figure legends will not be reviewed. Do not duplicate material from the text or described in the methods in your figure legends. Indicate scale bar size if it is not indicated on the figure. Figure legends should be prepared for each figure. There should be sufficient experimental detail in the legend to make the figure intelligible without reference to the text (unless the same material has been given with a previous figure, or in the Experimental Procedures section).

- **Tables:** Tables should be self-explanatory and should not duplicate textual material. Each table must be appended to the end of the manuscript, after the Figure Legends, in either Word or Excel table format. **DO NOT** embed photographs or image files of tables. Legends or keys must accompany each table and should not be added to the Figure Legends. Tables should be numbered consecutively using Arabic numerals, and should include a brief title. Use footnotes (superscripted lower-case letters) to explain abbreviations, statistics, etc. Place explanatory matter in footnotes, not in the heading.
- **Figures:** Figures must be first cited in the manuscript in ascending numeric order. Subsequent references need not be in order, but the first citation of a figure must occur after preceding figures and before following figures (eg. Figure 2 cannot be referenced until after Figure 1 has been). Figures can be first referenced in groups or in the same figure reference (eg. Figure 1-3 or Figure 5 and 6).

9. Abbreviations
Abbreviations should be kept to an absolute minimum. Abbreviations save relatively little space but greatly diminish the readability of a manuscript. In general, abbreviations should not appear in the Abstract, and sentences that contain more than one abbreviation merit careful review. The word must always be written out in full when first used and the proposed abbreviation given in parentheses. A list of all abbreviations used in the text and their meanings must be provided (in alphabetic order).

10. Acknowledgements

A short statement about grant and other financial support should be given, along with a list of contributions from collaborators who are not co-authors (it is implicit that they agree with this mention), and a declaration of competing interests. See above under Editorial Policies for additional items to be addressed in the Acknowledgements.

11. Short Communications:
A Short Communication is suitable for recording the results of complete small investigations or giving details of new models or hypotheses, innovative methods, techniques or apparatus. The style of main sections need not conform to that of full-length papers. Short communications are 2 printed pages (about 6 manuscript pages) in length.
The word limit is 1500 words and up to 10 references, and an abstract of not more than 120 words.

E-mail Confirmation of Submission
After submission you will receive an e-mail to confirm receipt of your manuscript. If you do not receive the confirmation e-mail after three (3) working days, please check your e-mail address carefully in the system. If the e-mail address is correct please contact the editorial office.

Proofs:
Proofs (Electronic proofs) will be sent through e-mail attachment to the corresponding author by PDF wherever possible and should be returned within three (3) working days of receipt through e-mail. Corrections should be restricted to typesetting errors; any other amendments made may be charged to the author. Any queries should be answered in full. Therefore, it is important to ensure that all of your corrections are returned to us in one all-inclusive e-mail or fax. Subsequent additional corrections will not be possible, so please ensure that your first communication is complete.

Sending a Revised Manuscript
While submitting a revised manuscript, corresponding author is requested to include, along with single copy of the final revised manuscript, a scanned copy of the revised manuscript with the changes underlined in **red** and with the point to point clarification to each comment. The manuscript number should be written on each of these documents.

Reprints:
Information for ordering reprints can be obtained from the editorial office.

Manuscript Submission
All materials send to email: kazi@salam.uitm.edu.my

[Manuscript along with the "Letter of Transmittal" signed by the corresponding author (scanned copy)].

Editorial Address

Kazi Ahsan Jamil, BDS, PhD

Editor-in-Chief,
*Compendium of Oral Science (*Compend.Oral.Sci*),*
Faculty of Dentistry
UiTM Sungai Buloh Campus
Jalan Hospital,
47000 Sungai Buloh,
Selangor, Malaysia.
Tel: +603-6126 6511
Fax: +603-6126 6103
E-mail: kazi@salam.uitm.edu.my